

WHAT IS CLAIMED IS:

1. A method for interlayer control comprising:

receiving a Service Data Unit (SDU) containing at least one Protocol Data Unit (PDU) across a channel from a first network node at a first layer of a second network node, the PDU having an associated sequence number for the PDU;

determining if the sequence number is the same as a previously received sequence number from a previous PDU;

determining if the previous PDU has been sent to a second layer at the second network node if the sequence number is not the same as the previously received sequence number, and storing the PDU if the previous PDU has been sent to the second layer;

sending an abort message for the previous PDU to the second layer if the sequence number is not the same as the previously received sequence number and the previous PDU was not sent to the second layer;

decoding the PDU if no abort was sent;

determining if a Cyclic Redundancy Check (CRC) for the PDU is valid;

and

sending a message to the first network node, the message being an ACK message if the CRC is valid and a NAK message if the CRC is not valid.

2. The method according to claim 1, further comprising receiving and decoding a channel number transmitting the SDU, a service instance identification of a service instance receiving this SDU, and a total number of PDUs in the SDU.

3. The method according to claim 2, further comprising sending an abort message that includes the service instance identification and the total number of PDUs aborted for this SDU in this channel.

4. The method according to claim 2, further comprising sending an abort message that includes the service instance identification, a number of new PDUs in the SDU, and a number of retransmitted PDUs in the SDU.

5. The method according to claim 2, wherein the service instance identification comprises a Service Reference ID (SR_ID).

6. The method according to claim 1, wherein the PDU comprises at least one of a packet and a frame.

7. The method according to claim 1, further comprising receiving soft-symbols with the PDU and storing the soft-symbols if the sequence number is the same as the previously received sequence number from the previous PDU.

8. The method according to claim 1, further comprising receiving soft-symbols with the PDU and storing the soft-symbols if the sequence number is not the same as the previously received sequence number and the previous PDU was not sent to the second layer.

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9. The method according to claim 1, wherein the first layer comprises a physical layer including a Hybrid Automatic Retransmission Request (HARQ) entity.

10. The method according to claim 1, further comprising requesting retransmission of the previous PDU before the sending of the abort.

11. The method according to claim 10, further comprising requesting retransmission of the previous PDU up to a maximum number of retransmission requests until the previous PDU is received.

12. The method according to claim 11, further comprising sending the abort message for the previous PDU to the second layer after the number of retransmission requests reaches the maximum number.

13. The method according to claim 11, further comprising send a NAK message to the first network node by the second layer after receipt of the abort message, the NAK message causing the first layer to request retransmission of the previous PDU again up to a maximum number of retransmission requests until the previous PDU is received.

14. The method according to claim 1, wherein the second layer comprises a link layer including a Radio Link Protocol (RLP) entity.

15. The method according to claim 1, wherein the first network node is a base station and the second network node is a mobile device.

16. The method according to claim 1, wherein the first network node is a mobile device and the second network node is a base station.

17. A system for interlayer control comprising:

a first network node, the first network node having a link layer, a Medium Access Control (MAC) sublayer, and a physical layer, the first network node sending at least one Protocol Data Unit (PDU) to the second network node, each PDU having an associated sequence number for the PDU; and

a second network node, the second network node having a second link layer, a second Medium Access Control (MAC) sublayer, and a second physical layer, the second physical layer receiving the at least one PDU and identifying a missing PDU by checking the sequence number of each received PDU, the second physical layer issuing a retransmission request to the first network node for any missing PDUs,

wherein whenever a maximum number of retransmission requests for a specific PDU is reached at the second physical layer, the second physical layer sends an abort message to the second link layer through the second MAC layer for the specific PDU.

18. The system according to claim 17, wherein the link layer and the second link layer include a Radio Link Protocol entity.

19. The system according to claim 17, wherein the physical layer and the second physical layer include a Hybrid Automatic Retransmission Request (HARQ) entity.

20. The system according to claim 17, wherein the link layer sends a MAC-SDUready.Request primitive to the MAC sublayer initiating the sending of a MAC Service Data Unit (SDU), the MAC-SDUReady.Request primitive containing a type of the SDU, a size of the SDU, and a prioritization indicator, the prioritization indicator indicating to the MAC sublayer how to prioritize fragments of the PDU relative to other types of MAC sublayer traffic.

21. The system according to claim 20, wherein the SDU type comprises one of new and retransmitted.

22. The system according to claim 20, wherein the link layer sends a data primitive to the MAC sublayer carrying one of an SDU and a fragment of an SDU to be transmitted to the second network node, the data primitive further containing a type of the SDU and a size of the SDU.

23. The system according to claim 22, wherein the SDU type comprises one of new and retransmitted.

24. The system according to claim 17, wherein the first network node is a base station and the second network node is a mobile device.

25. The system according to claim 17, wherein the first network node is a mobile device and the second network node is a base station.

26. A method for interlayer control comprising:

sending at least one Protocol Data Unit (PDU) from a first network node to a second network node, each PDU having an associated sequence number for the PDU;

identifying a missing PDU at the second network node by checking the sequence number of each received PDU, the second network node issuing a retransmission request to the first network node for the missing PDU; and

sending an abort message for the missed PDU from a physical layer at the second network node to a link layer at the second network node whenever a maximum number of retransmission requests for the missed PDU is reached.

27. The method according to claim 26, wherein the first network node is a base station and the second network node is a mobile device.

28. The method according to claim 26, wherein the first network node is a mobile device and the second network node is a base station.

29. An article comprising a storage medium with instructions stored therein, the instructions when executed causing a computing device to perform:

receiving a Protocol Data Unit (PDU) from a first network node at a first layer of the computing device, the PDU having an associated sequence number for the PDU;

determining if the sequence number is the same as a previously received sequence number from a previous PDU;

determining if the previous PDU has been sent to a second layer at the computing device if the sequence number is not the same as the previously received sequence number, and storing the PDU if the previous PDU has been sent to the second layer;

sending an abort message for the previous PDU to the second layer if the sequence number is not the same as the previously received sequence number and the previous PDU was not sent to the second layer;

decoding the PDU if no abort was sent and determining if a Cyclic Redundancy Check (CRC) for the PDU is valid; and
sending a message to the first network node, the message being an ACK message if the CRC is valid and a NAK message if the CRC is not valid.

30. The article according to claim 29, further comprising receiving and decoding a channel number transmitting the PDU, an identification of a service instance including the PDU, a total number of PDUs in the SDU, and the sequence number after the receiving step.

31. The article according to claim 30, further comprising sending an abort message that includes the service reference identification and the total number of PDUs for the channel.

32. The article according to claim 30, further comprising sending an abort message that includes the service instance identification, a number of new PDUs in the SDU, and a number of retransmitted PDUs in the SDU.

33. The article according to claim 30, wherein the service instance identification comprises a Service Reference ID.

34. The article according to claim 29, wherein the PDU comprises at least one of a packet and a frame.

35. The article according to claim 29, wherein the first layer comprises a physical layer including a Hybrid Automatic Retransmission Request (HARQ) entity.

36. The article according to claim 29, further comprising requesting retransmission of the previous PDU before the sending of the abort.

37. The article according to claim 36, further comprising requesting retransmission of the previous PDU up to a maximum number of retransmission requests until the previous PDU is received .

38. The article according to claim 37, further comprising sending the abort message for the previous PDU to the second layer after the number of retransmission requests reaches the maximum number.

39. The article according to claim 37, further comprising send a NAK message to the first network node by the second layer after receipt of the abort message, the NAK message causing the first layer to request retransmission of the previous PDU again up to a maximum number of retransmission requests until the previous PDU is received.

40. The article according to claim 29, wherein the second layer comprises a link layer including a Radio Link Protocol (RLP) entity.

41. A mobile station comprising:

a retransmission entity; and

at least one re-sequencing entity,

wherein the retransmission entity receives at least one Protocol Data Unit (PDU) from a network node, each PDU having an associated sequence number for the PDU, identifies a missing PDU by checking the sequence number of each received PDU, issuing a retransmission request to the network node for the missing PDU, and sends an abort message for the missed PDU to the at least one re-sequencing entity whenever a maximum number of retransmission requests for the missed PDU is reached.

42. The mobile station according to claim 41, wherein the PDU comprises one of a packet and a frame.

43. The mobile station according to claim 41, wherein the retransmission entity comprises a Hybrid Automatic Retransmission Request (HARQ) entity.

44. The mobile station according to claim 41, wherein the at least one re-sequencing entity comprises a Radio Link Protocol (RLP) entity.

45. The mobile station according to claim 41, wherein the mobile station comprises one of a mobile phone, a Personal Digital Assistant (PDA), and a laptop computer.